

**ABSTRACT OF THE DISCLOSURE**

DC/DC converter for managing high voltage gain that includes an input side having a high tap and a low tap, an output side having a high tap and a low tap, a converter circuit interconnecting the input side and the output side, and a steering branch having at least one rectifier and one of at least one winding and a capacitor. The steering branch interconnects the input side with the output side. The converter circuit is preferably selected from the following types of conventional converter circuits: buck, boost, buck-boost, Cuk, Sepic, Zeta, half bridge boost for low-line input, half bridge boost for high-line input, and half bridge boost for universal-line input. The DC/DC converter uses coupled inductor to shift the original rectifier current to an added branch and then control the rectifier current decrease rate in the new branch when rectifier turns off.